

**AMENDMENTS TO THE DRAWINGS:**

The attached sheet of drawing includes changes to Fig. 8. As requested by the Examiner, the legend "prior art" has been added to Fig. 8.

Attachment: One Replacement Drawing Sheet (Fig. 8)

## **REMARKS**

### **1. Status**

Applicant respectfully requests favorable reconsideration of this application, as currently amended, in light of the following remarks.

In this reply, Applicant amends claims 1, 5, 6, 8, 9, 15, 16, 18, 19, and 26; and cancels claims 3, 4, 10, 17, and 25 without prejudice or disclaimer. Claims 1, 2, 5-9, 11-16, 18-24, and 26-31 are thus currently pending, with claims 2, 11-14, 20-22, and 29-31 withdrawn as directed to non-elected inventions. No new matter has been added.

### **2. References Listed in the Specification**

In response to the indication that the references listed in the specification have not been considered, Applicant files concurrently an Information Disclosure Statement along with the necessary fee, a PTO/SB/08 form, and copies of the cited references. Please charge any additional required fees to our deposit account 06-0916. Accordingly, Applicant respectfully requests that these references now be considered.

### **3. Objection to the Drawings**

In response to the objection to the drawings under M.P.E.P. § 608.02(g), Applicant submits a replacement drawing sheet for Fig. 8 modified to include the legend "prior art," as requested by the Examiner. Accordingly, Applicant respectfully requests that the objection to the drawings be withdrawn.

### **4. Objection to the Title**

In response to the objection to the title of the invention as being not descriptive, Applicant amends the title to read "METHOD OF FORMING A DIE SURFACE TO PRODUCE AN OPTICAL ELEMENT" and submits that the amended title is sufficiently

descriptive. Accordingly, Applicant respectfully requests that the objection to the title be withdrawn.

#### **5. Objection to the Disclosure**

In response to the objection to the disclosure because of informalities, Applicant has reviewed the specification and corrected numerous grammatical and spelling errors, as requested by the Examiner. Accordingly, Applicant respectfully requests that the objection to the disclosure be withdrawn.

#### **6. Rejections Under Section 112**

In response to the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, as being indefinite, Applicant amends claim 1 to recite “moving the material relatively to the cutting tool so as to form the die surface with a curvature on the material” and “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu$ m or less,” which is believed to address the Examiner’s concerns regarding claim 1. Applicant also points out that the assertion at page 6 of the Office Action that “a Rockwell hardness HRA 80 is equal to a Vickers Hv hardness of about 647, not 1000” is incorrect, and that while a Rockwell hardness HRC 80 is equal to a Vickers Hv hardness of about 647, a Rockwell hardness HRA 80 is equal to a Vickers Hv hardness of about 1000.

In response to the rejection of claims 3-10, 15-19, and 23-28 under 35 U.S.C. § 112, second paragraph, as being indefinite, Applicant cancels claims 3, 4, 10, 17, and 25 without prejudice or disclaimer; amends claim 1 to recite “bringing a cutting tool . . . wherein the cutting tool has a cutting edge,” thereby providing sufficient antecedent basis to claim 7; amends claim 9 to delete “and the cutting step is conducted while the transferring surface is shifted relatively to the rake face . . .”; amends claim 16 to recite

“the material is relatively rotated to the cutting edge of the cutting tool around the optical axis of the optical surface to be formed,” which is believed to sufficiently describe the optical axis to a person of ordinary skill in the art; amends claim 18 to recite “so that the position of the shaft is controlled within an error of 100 nm or less”; and amends claim 19 to recite “a moving section movable along 3-axes or more.”

Accordingly, Applicant submits that the rejections of claims 1, 3-10, 15-19, and 23-28 under 35 U.S.C. § 112, second paragraph, as being indefinite have been either mooted by cancellations or addressed by the foregoing amendments, and respectfully requests that the rejections under 35 U.S.C. § 112 be withdrawn.

## **7. Rejections Under Section 102**

Applicant respectfully requests favorable reconsideration of the rejection of claims 1, 5, 7, 24, 26, and 27 under 35 U.S.C. § 102(b) as being anticipated by Umetani et al. (U.S. Patent No. 5,171,348, “Umetani”) for the reasons set forth below.

In the interest of moving prosecution forward, Applicant amends claim 1 to recite, *inter alia*, that “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu$ m or less” and that “the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material,” which features find non-limiting support in the originally-filed application at least in paragraphs [0024], [0055], [0114], and [0115]. Applicant also amends claim 1 to recite that “the material has a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000.” Applicant submits that Umetani fails to disclose at least these features of amended independent claim 1.

First, Applicant submits that Umetani fails to disclose at least that “the material has a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000” because Umetani teaches Ni-P or Ni-B with a Vickers hardness “in the range from 500 Hv to 1000 Hv” (c. 8, l. 6), which is not larger than 1000. Moreover, Umetani teaches that “Ni metal, Ni-P alloy and Ni-B alloy are easy to be cut[] and excellent in machining precision” but that “the other materials are very difficult to be cut[] because of their high hardness, so that diamond bite can be worn out instantly” (see c. 16, ll. 5-14, and Table 6). Umetani thus teaches away from cutting a material having a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000 because Umetani’s “other materials,” which are harder than its “easy to be cut” materials with a Vickers hardness of 500–1000, wear out the diamond instantly and should thus be avoided.

Second, Applicant submits that while Umetani discloses “an intermediate layer 53 . . . formed in a thickness of about 5  $\mu\text{m}$ ,” Applicant fails to disclose that “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu\text{m}$  or less” and that “the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material.”

Therefore, Umetani fails to disclose at least that “the material has a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000,” that “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu\text{m}$  or less,” and that “the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material,” as recited in amended independent

claim 1. Accordingly, Applicant respectfully requests favorable reconsideration of the rejection of independent claim 1 (and dependent claims 5, 7, 24, 26, and 27) as being anticipated by Umetani.

Applicant respectfully requests favorable reconsideration of the rejection of claims 1, 24, and 26-28 under 35 U.S.C. § 102(b) as being anticipated by Uno et al. (U.S. Patent No. 5,008,002, "Uno") for the reasons set forth below.

Uno "relates to a process for producing a mold for glass press molding" (abstract). However, Applicant submits that Uno does not disclose at least that "the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu$ m or less" and that "the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material," as recited in amended independent claim 1.

Accordingly, Applicant respectfully requests favorable reconsideration of the rejection of independent claim 1 (and dependent claims 24 and 26-28) as being anticipated by Uno.

Applicant respectfully requests favorable reconsideration of the rejection of claims 1, 5-7, 18, 23, 24, and 26-28 under 35 U.S.C. § 102(a) as being anticipated by Applicant's Allegedly Admitted Prior Art in U.S. Patent Application Publication No. 2004/0113299 ("AAAPA") for the reasons set forth below.

Applicant submits that while the identification of work done by another as being "prior art" in the specification can be treated as being admitted prior art under M.P.E.P § 2129(II), Applicant's specification does not include such an identification. In particular,

the “background of the invention” section includes features which, while they may have been known by Applicant, were not “the work of another” and are not admitted prior art. Applicant further submits that “the examiner must determine whether the subject identified as “prior art” is applicant’s own work, or the work of another [and that in] the absence of another credible explanation, examiners should treat such subject matter as the work of another” (M.P.E.P § 2129(I)). Accordingly, Applicant submits that, with the possible exception of the patent references specifically listed in the specification, which the Examiner can cite directly, no “prior art” identification was made in the specification and further submits that nothing suggests that any alleged admission of prior art was “the work of another.”

Applicant also submits, in any case, that AAAPA does not teach or suggest at least that “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu\text{m}$  or less” and that “the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material” as recited in amended independent claim 1.

Accordingly, Applicant respectfully requests favorable reconsideration of the rejection of independent claim 1 (and dependent claims 5-7, 18, 23, 24, and 26-28) as being anticipated by AAAPA.

## **8. Double Patenting Rejections**

Applicant respectfully requests favorable reconsideration of the rejection of claims 1, 4-9, 15, 16, 18, 19, 23, 24, and 26-28 on the ground of nonstatutory obviousness-type double patenting over claim 41 of Matsuda et al. (U.S. Patent No.

7,178,433, "Matsuda") or claims 1-18 of Morikawa et al. (U.S. Patent No. 7,060,175, "Morikawa") in view of Umetani.

Applicant submits that claim 41 of Matsuda or claims 1-18 of Morikawa, whether taken independently or in combination with Umetani, fail to teach or suggest that "the material has a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000," that "the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu$ m or less," and that "the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material," as recited in amended independent claim 1.

Accordingly, Applicant respectfully requests that the rejections of claims 1, 4-9, 15, 16, 18, 19, 23, 24, and 26-28 on the ground of nonstatutory obviousness-type double patenting over claim 41 of Matsuda or claims 1-18 of Morikawa in view of Umetani be withdrawn.

In response to the provisional rejection of claims 1, 4-9, 15, 16, 18, 19, 23, 24, and 26-28 on the ground of nonstatutory obviousness-type double patenting over claims 1-35 of copending U.S. Patent Application No. 11/290,499, Applicant respectfully requests postponement of the requirement to file a terminal disclaimer until there are otherwise allowed claims.

#### **9. Rejections Under Section 103**

Applicant respectfully requests favorable reconsideration of the rejection of claims 1, 5-7, 18, 23, 24, and 26-28 under 35 U.S.C. § 103(a) as being unpatentable over AAAPA in view of Sata et al. (U.S. Patent No. 5,887,048, "Sata").

As discussed above, Applicant did not admit any “prior art” and AAAPA in any case fails to disclose that “the cutting step is conducted to cut the material with a cutting-in depth of 1  $\mu\text{m}$  or less” and that “the cutting tool has a cutting edge capable of coming in contact with the material and the cutting step is conducted while the cutting tool is set such that a single point of the cutting edge comes in contact with the material,” as recited in amended independent claim 1. Applicant submits that Sata also fails to teach or suggest at least these features of amended independent claim 1.

Accordingly, whether taken alone or in any combination, AAAPA and Sata fail to teach or suggest all the features of amended independent claim 1. Applicant thus respectfully requests favorable reconsideration of the rejection of claims 1, 5-7, 18, 23, 24, and 26-28 as being unpatentable over AAAPA in view of Sata.

Applicant respectfully requests favorable reconsideration of the rejection of claims 8, 9, 15, 16, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Umetani in view of Mizutani et al. (U.S. Patent No. 6,758,640, “Mizutani”) and/or Yoshihiro et al. (U.S. Patent No. 6,913,424, “Yoshihiro”).

As discussed above, Umetani does not disclose cutting a material having a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000 with a cutting tool. Mizutani and Yoshihiro do mention cutting techniques, but they also fail to teach or suggest cutting a material having a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000 with a cutting tool. Moreover, even if the Examiner were to disagree and claim that Mizutani or Yoshihiro discloses cutting a material having a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000, neither Mizutani nor Yoshihiro could properly be combined with Umetani to

incorporate this feature in Umetani because Umetani teaches away from cutting a material having a hardness larger than Rockwell hardness HRA 80 or Vickers hardness Hv 1000 as discussed in Section 7.

Accordingly, whether taken alone or in any proper combination, Umetani, Mizutani and Yoshihiro fail to teach or suggest all the features of amended independent claim 1. Applicant thus respectfully requests favorable reconsideration of the rejection of claims 8, 9, 15, 16, 18, and 19 as being unpatentable over Umetani in view of Mizutani and/or Yoshihiro.

#### **10. Concluding Remarks**

The Office Action contains characterizations of the claims, specifications, and background art with which Applicant may not necessarily agree. Accordingly, Applicant declines to subscribe to any such characterizations unless expressly set forth in this paper.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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